News Briefs

Discovery rolls to launch pad

Discovery is on the launch pad at Kennedy Space Center after being moved Monday, July 14, for final preparations for STS-85, a mission to deploy and retrieve the CRISTA-SPAS science satellite. STS-85 Commander Curt Brown, Pilot Kent Rominger, Mission Specialists Jan Davis, Bob Curbeam and Stephen Robinson, and Payload Specialist Bjarni Tryggvason will travel to Florida for the Terminal Countdown Demonstration Test July 22-23. NASA managers will conduct the STS-84 Flight Readiness Review July 24.

Meanwhile, *Atlantis* continues its processing in the Orbiter Processing Facility for mid-September's STS-86 mission to Russia's Mir Space Station to deliver Wendy Lawrence and supplies to the station and return Mike Foale from his four-month stay.

NASA licenses air monitoring technology

A technology originally developed for monitoring atmospheric air quality now is being used to help U.S. industries reduce smokestack pollution. NASA's Langley Research Center is working with MERCO Inc. of Golden, Colo., to develop fast-response, nonmechanical, remote gas-sensing technology for monitoring gaseous pollutants emitted from petroleum refineries and chemical manufacturing facilities.

NASA adjusts to loss of ADEOS satellite

Two NASA instruments were aboard the ADEOS spacecraft, which was declared lost on June 30 by the National Space Development Agency of Japan. NASA's two instruments—the Ozone Mapping Spectrometer and the NASA Scatterometer—were lost. Because the scatterometer provided measurements that will be needed over the long term, NASA was already developing a second instrument. That instrument, called SeaWinds, will be delivered to NASDA for integration next April and is scheduled for launch in 1999 on ADEOS II.

Mars Global Surveyor enroute to Mars

Two weeks after recovery from safe mode and the restoration of standard operations, the Mars Global Surveyor continues to cruise toward an encounter with Mars later this summer. Surveyor is 137.88 million kilometers from the Earth, 24.04 million kilometers from Mars and will intercept Mars on Sept 11.

Asteroid Mathilde reveals dark past

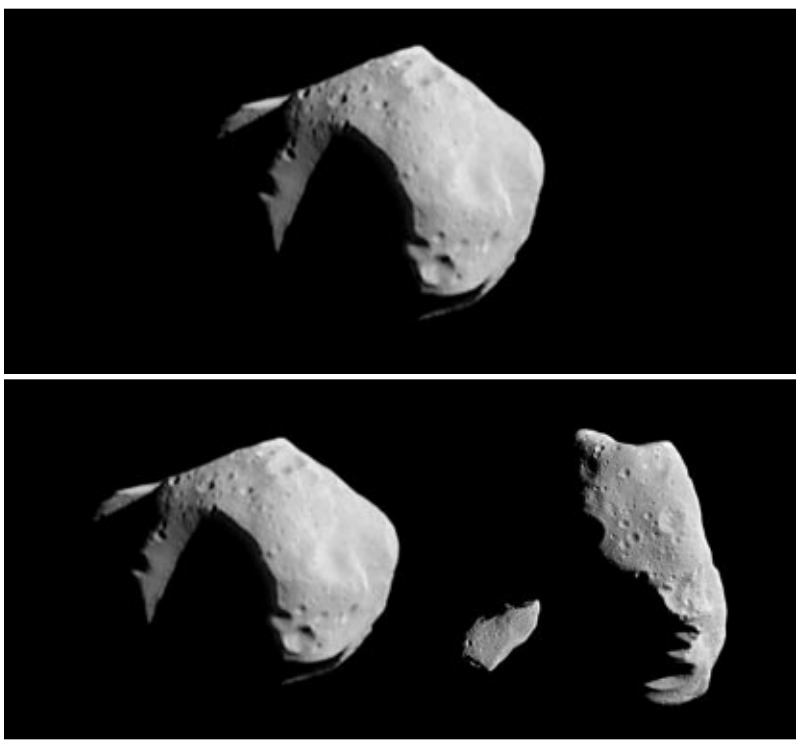
More than 100 years after its discovery, asteroid 253 Mathilde is sharing its secrets with scientists at Johns Hopkins University.

A 25-minute flyby of the asteroid by the Near Earth Asteroid Rendezvous, or NEAR, spacecraft on June 27 has resulted in spectacular images of a dark, crater-battered little world assumed to date from the beginning of the solar system.

The Mathilde flyby is the closest encounter with an asteroid to date and the first with a C-type asteroid. The asteroid's mean diameter was found to be 33 miles, which is somewhat smaller than researchers originally estimated. A study of the asteroid's albedo (brightness or reflective power) shows that it reflects three percent of the sun's light, making it twice as dark as a chunk of charcoal. Such a dark surface is believed to consist of carbon-rich material that has not been altered by planet-building processes, which melt and mix up the solar system's original building block materials.

"The Mathilde encounter was one of the most successful flybys of all time," says Robert Farquhar, of the Applied Physics Laboratory at Johns Hopkins, who serves as the NEAR mission director. "We got images that were far better than we thought possible, especially since the spacecraft was not designed for a fast flyby."

Although Mathilde proved to be rounder than asteroids such as Gaspra and Ida, Joseph Veverka of Cornell University, who leads the mission's imaging science team, says, "Mathilde turned out to be more irregularly shaped than most of us expected. The degree to which the asteroid has been battered by collisions is astounding. At first glance there are more huge craters than there is asteroid."



Top: This image mosaic of asteroid 253 Mathilde is constructed from four images acquired by the NEAR spacecraft on June 27. This was taken from a distance of 1,500 miles. The surface has large craters, including the deeply shadowed one at its center, which is estimated to be more than 6 miles across. Below: Mathilde, left, measures 33 miles in diameter, much larger than asteroids Gaspra, center, and Ida, right.

New handbook to be available electronically

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"What employees need to remember is that the new benefits statement is somewhat like the Sunday paper," Stewart said. "Some days you'll want to read the paper from cover to cover, other days maybe just the comics or the want ads. With the benefits statement , the disability sections may not seem important to you this morning …but hurt your back tonight and you'll probably be real interested in your disability coverage. The important things to remember are that there are many benefits available to you and that when you need it , you can receive an up-to-date summary of these benefits within moments of your request."

Stewart said the statements contain more than 200 data elements or calculations that are unique to each employee. Since each of these elements would be hard to explain in the statement, a companion chapter in the new benefits handbook was developed. The new handbook complements the statement by giving an explanation of each element of the benefits statement. Stewart said that he is sure that continuing customer feedback will help them to continuously adjust the statement to meet changing employee needs.

"The new employee benefits handbook will be available electronically with updates occurring real-time," Stewart said. "It replaces the old binder-type handbook that required annual paper updates. The book, like the new statement, is intended to be useful throughout an entire career and encompasses a whole lot more in an easy to read, easy to update format."

The handbook not only gives details about each section of the statement but important contacts, recurring open season dates and a quick-look guide to employees' pay and benefits.

Employees can expect their statements to arrive by the end of this month. The JSC benefits handbook should be available on the Human Resources home page at: http://www.hro.jsc.nasa.gov by early August.

Although the handbook will primarily be distributed electronically, Employees can obtain a hard copy by calling x32681 or by visiting Bldg. 45, Rm. 140.

STS-94 pushing envelope of scientific knowledge

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"We've completed over 165 already and we're not done yet, so I think we're getting over 110 percent of our science output."

He cited similar progress in the materials science world.

"We're processing a lot of semiconductor materials and other new metallic materials, metallic glasses that have other technological applications, so we have a lot of breakthroughs we're working on here," Thomas explained. "It might be a few years before they find their way into everyday life down on Earth, but this is basic research and we're pioneering out here."

Investigators on the ground said the Microgravity Science Laboratory-1 mission was pushing the envelope of knowledge of combustion, setting a fire at extremely low atmospheric pressures and giving birth to twin droplets of flame.

The morning of July 12, Linteris succeeded in burning a drop of heptane fuel at one-quarter of the atmospheric pressure on Earth. The Droplet Combustion Experiment was providing researchers with fundamental knowledge of the burning process, verifying a complex, chemical model that may lead to cleaner and safer ways to burn fuels.

"It was a superior burn," said Fred Dryer of Princeton University. "This is the first time we've been successful with a quarter-atmosphere burn. It's always hard to do science at extremities."

On July 13, researchers in the Spacelab Mission Operations Control Center set an all-time record for the number of commands issued to experiments aboard a Spacelab mission when the 25,838th science command was sent to the shuttle, breaking a 1994 record.

Crew members also worked with the Structure of Flame Balls at Low Lewis-number, or SOFBALL, experiment that looks at how fuel/oxidizer concentrations and temperature affect the flameball's stability and existence.

JSC Photo 97-08077 by Steve Candler

TAKING A DIP—Tolman Services' Gerry Stahler sweeps algae into a drain the JSC pond. Heat and heavy rain around JSC contributed to the growth on the surface of the pond of the unsightly green organisms.

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Rover performing well; rock studies under way

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presence of oxidized iron in surface materials.

"The surface of Mars is rusting," said Jim Bell of Cornell University. "We don't know when or how fast it's rusting, but we hope to find these things out."

Rather than identifying the rocks with a numbering system, JPL scientists named them after cartoon characters.

"It's easier than saying that rock over there with the little things on it," Golombeck said. "The idea to use the names is really to help us refer to the rocks among ourselves, and if you can have a little fun with it, why not?"

Other rocks to be studied include Yogi, Flattop and Casper. More than a dozen rocks have been identified with more expected.

The first specimen analysis, of a rock named Barnacle Bill some 14 feet from the landing site, went well as the rover's drivers nuzzled the microwave-sized vehicle against its surface and found it remarkably similar to rocks found on Earth.

The trip to the next target also went well until Sojourner was directed to move a bit too fast and began climbing up the side of a large, bear-shaped rock as it tried to place its probe against the specimen, nicknamed Yogi.

"It just went without thinking," said Mission Manager Richard Cook. "When you tell it to move, it moves faster than when it moves on its own. So that is why we missed it."

The rover was undamaged by the collision, but ended up repeating it the next day when the control team at NASA's Jet Propulsion Laboratory sent instructions for backing away and returning twice, thinking the rover hadn't received the first set of instructions when it had.

Pathfinder landed just after noon CDT on Friday, July 4, successfully entering the Martian atmosphere, deploying its parachutes, and bouncing 16 times before coming to rest near Ares Vallis chasm.

On Earth, the Pathfinder scientists burst into cheers as the first transmissions from the lander reported that the craft was healthy and performing as planned.

"I am ecstatic, absolutely ecstatic to report on behalf of the entire Mars Pathfinder team that we are on the surface of Mars and we are receiving the first telemetry from the spacecraft," said Pathfinder Project Manager Brian Muirhead. "This is way beyond our expectations."

"What a way to celebrate the Fourth of July, by doing things that have never been done before. This is what NASA is about," said JPL Director Ed Stone.

The lander bounded onto the Martian surface at 23.5 miles per hour, protected by four air bags that inflated during the atmospheric decent. When the craft came to a stop, the air bags deflated and retracted, leaving a metallic tetrahedron containing the Sojourner rover exposed to the Martian terrain.

Pathfinder scientists said the rover is performing well and should easily outlive its minimum life expectancy of seven days, possibly continuing its prospecting for up to a month.

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